MULTIPLE BIRTHS ON HIGH – PRODUCING DAIRY COWS: TRIGGERING FACTORS AND CONSEQUENCES

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OBJECTIVES

This project is based on the analysis of data from a high production dairy cow farm in the province of Girona with the following objectives:

- To determine the incidence of multiple births.
- Assess the triggering factors and consequences of multiple vs. singleton calvings.

INTRODUCTION

TRIGGERING FACTORS

Milk production
Increased dry matter intake
Number of lactations
Seasonality
Genetics
Hormone use to increase production
Ovarian cysts

CONSEQUENCES

Reproductive
Digestive and metabolic
Freemartinism

ALTERATIONS IN PRODUCTION AND REPRODUCTIVE PARAMETERS

RESULTS AND DISCUSSION

INCIDENCE

Table 1. Mean and census of twin and singletons calvings

	2015		2016		Mean	
	Calvings (N)	%	Calvings (N)	%	Calvings (N)	%
Singletons	2488	95,73	2746	96,35	2617	96,04
Twins	111	4,27	104	3,65	108	3,96
Total	**2599**	**100**	**2850**	**100**	**2725**	**100**

NUMBER OF LACTATIONS

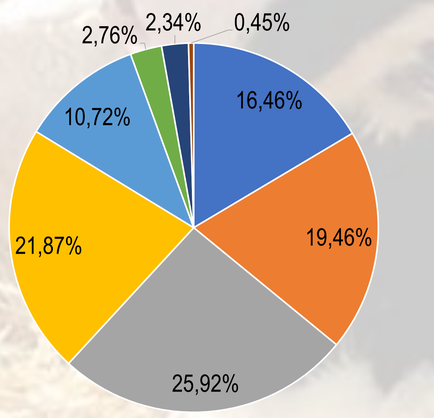

Figure 1. Mean of the incidence of the multiple births, depending on the number of lactations

SEASONALITY OF AI CONCEPTION

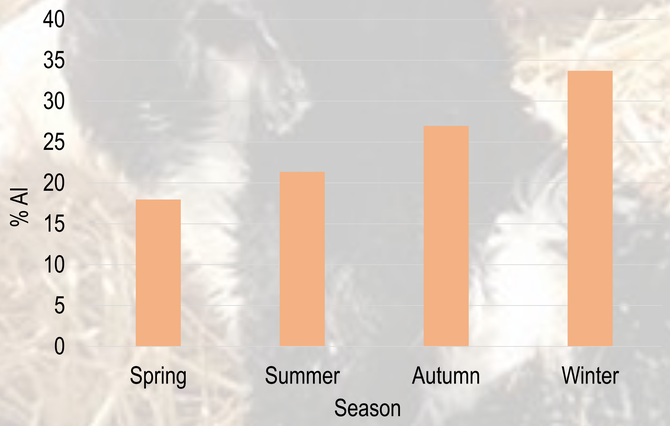

Figure 2. Seasonality of AI conception

CALVING ASSISTANCE

Table 2. Census, mean and ± SD of assistance at twin calvings

	2015		2016		2015 - 2016	
Calvings requiring assistance	Calvings (N)	%	Calvings (N)	%	Mean	± SD
Death pre-calving	6	5,41	4	3,85	4,6	1,10
Hard traction	9	8,11	13	12,50	10,3	3,11
Slight traction	42	37,84	29	27,88	32,9	7,04
Unassisted	53	47,75	56	53,85	50,8	4,31
Premature	1	0,90	2	1,92	1,4	0,72
Total	**111**	**100**	**104**	**100**	**100**	**0**

Table 3. Census, mean and ± SD of assistance at singleton calvings

	2015		2016		2015 - 2016	
Calvings requiring assistance	Calvings (N)	%	Calvings (N)	%	Mean	± SD
Death pre-calving	37	1,49	46	1,68	1,58	0,13
Hard traction	120	4,82	148	5,39	5,11	0,40
Slight traction	449	18,05	506	18,43	18,24	0,27
Unassisted	1863	74,88	2031	73,96	74,42	0,65
Cesarean	2	0,08	1	0,04	0,06	0,03
Premature	15	0,60	12	0,44	0,52	0,12
Incorrect presentation	2	0,08	2	0,07	0,08	0,01
Total	**2488**	**100**	**2746**	**100**	**100**	**0**

PERINATAL MORTALITY

Table 4. Census, mean and ± SD of the perinatal mortality at múltiple births

	2015				2016				2015 - 2016	
Perinatal Mortality	B^1	B^2	B^1+B^2	%	B^1	B^2	B^1+B^2	%	Mean	± SD
Stillborn	45	23	68	30,63	48	22	70	33,65	32,14	2,14
Born alive	66	88	154	69,37	56	82	138	66,35	67,86	2,14
Total	**111**	**111**	**222**	**100**	**104**	**104**	**208**	**100**	**100**	**0**

B^1 First breeding; B^2 Second breeding

Table 5. Census, mean and ± SD of the perinatal mortality at singleton births

	2015		2016		2015 - 2016	
Perinatal Mortality	B^1	%	B^1	%	Mean	± SD
Stillborn	123	4,94	174	6,34	5,64	0,98
Born alive	2365	94,98	2572	93,66	94,32	0,93
Total	**2488**	**100**	**2746**	**100**	**100**	**0**

B^1 First breeding

POSTPARTUM DISORDERS

Table 6. Incidence, mean and ± SD of the placental retention at múltiple births

	2015		2016		2015 - 2016	
Placental retention	Cows (N)	%	Cows (N)	%	Mean	± SD
Yes	46	41,44	40	38,46	39,95	2,11
No	65	58,56	64	61,54	60,05	2,11
Total	**111**	**100**	**104**	**100**	**100**	**0**

Table 7. Incidence, mean and ± SD of the placental retention at singleton births

	2015		2016		2015 - 2016	
Placental retention	Cows (N)	%	Cows (N)	%	Mean	± SD
Yes	222	8,92	218	7,94	8,43	0,70
No	2266	91,08	2528	92,06	91,57	0,70
Total	**2488**	**100**	**2746**	**100**	**100**	**0**

Table 8. Incidence, mean and ± SD of the metritis at múltiple births

	2015		2016		2015 - 2016	
Metritis	Cows (N)	%	Cows (N)	%	Mean	± SD
Yes	21	18,92	16	15,38	17,15	2,50
No	90	81,08	88	84,62	82,85	2,50
Total	**111**	**100**	**104**	**100**	**100**	**0**

Table 9. Incidence, mean and ± SD of the metritis at singleton births

	2015		2016		2015 - 2016	
Metritis	Cows (N)	%	Cows (N)	%	Mean	± SD
Yes	220	8,84	235	8,56	8,70	0,20
No	2268	91,16	2511	91,44	91,30	0,20
Total	**2488**	**100**	**2746**	**100**	**100**	**0**

FREEMARTINISM

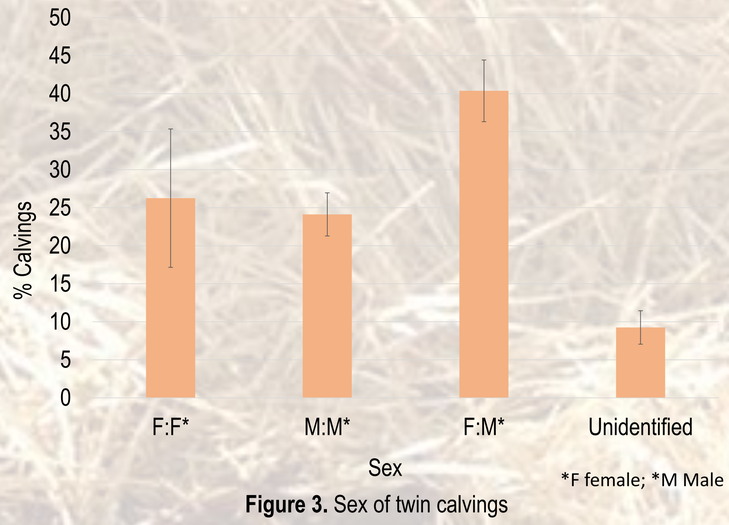

Figure 3. Sex of twin calvings

ALTERATIONS IN PRODUCTION AND REPRODUCTIVE PARAMETERS

Table 10. Interval from calving to AI conception of the twin and singleton calvings

	Twin Calvings		Twin Calvings		Singleton Calvings		Singleton Calvings	
	2015 - 2016	2016 -2017	Mean	± SD	2015 - 2016	2016 -2017	Mean	± SD
Embryonic resorption	141,91	126,55	134,23	10,86	116,28	112,30	114,29	2,817
No embryonic resorption	115,18	112,88	114,03	1,63	107,51	106,23	106,87	0,908

CONCLUSIONS

- Twinning occurs mainly during 3rd and 4th lactations.
- Twinning is presented mainly in the fall and winter (AI).
- 50% of twin calvings require assistance. Perinatal mortality is 6x more likely in twin calvings vs. singleton calvings. Mortality is 5x more likely to take place on first vs. second breeding.
- Postpartum disorders are more common in multiple births and consequently alterations in production and reproductive parameters.
- Twin calvings results in a one – oestrus vs. singleton calvings.
- 40% of twin births result in sex - mixed twins and freemartinism.